TACSM Abstract

The Effect of Capsaicin on Peak Force and Rate of Force of Development in Resistance-Trained Men – A Pilot Study

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ABSTRACT

Capsaicin (CAP) is a robust stimulator of transient receptor potential vanilloid 1 (TRPV1), which promotes calcium (Ca^{2+}) efflux from the sarcoplasmic reticulum and can potentiate cross-bridge formation that has the potential to affect peak force and rate of force development (RFD). However, its effect on overall lower body strength is limited. **PURPOSE**: To determine the effect of acute CAP consumption on peak force and RFD in resistance-trained men. **METHODS**: Resistance-trained men (n=5; age: 22±2years, mass: 80.9±11.9kg; height: 177.3±6.6cm) were supplemented either with 2.4mg of CAP or placebo (PL; microcrystalline cellulose). Prior to (PRE) and 45 minutes after (POST) the supplementation, participants completed three maximal isometric squats with 2 minutes of rest between each repetition on a portable force platform. These two conditions were separated by 2 weeks. Peak force and RFD were recorded using a portable force platform to assess muscle contractility during isometric squats. Raw ground reaction force data was exported to MATLAB processing peak force and RFD using a custom analysis program. A 2-way repeated measures ANOVA was used to analyze the effect of acute CAP ingestion on peak force and RFD. **RESULTS**: No significant ($p > 0.05$) differences were observed between CAP and PL for peak force (CAP: PRE: 3370.48 ± 675.56 N vs. POST: 3305.06 ± 745.06 N; PL: PRE: 3215.95 ± 526.73 N vs. POST: 3294.58 ± 696.65 N) and RFD (CAP: PRE: 1038.52 ± 716.84 N·s^{-1} vs. POST: 548.41 ± 89.08 N·s^{-1}; PL: PRE: 655.34 ± 185.91 N·s^{-1} vs. POST: 513.29 ± 177.85 N·s^{-1}). **CONCLUSION**: This pilot study demonstrated that CAP has minimal effect on peak force and RFD. However, this could be due to a small sample size, which resulted in low statistical power. Additionally, the results may have been influenced by the timing of the muscle biopsies, which were taken prior to the POST testing.